Claim Amendments

Claims 1-60 (Cancelled).

61. (Newly Added) A surgical implant, comprising:

a sensor for measuring intra-body diagnostic data;

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a controller configured for generating an electrical communication signal containing the diagnostic data;

one or more acoustic transducers;

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circuitry for collectively configuring the one or more acoustic transducers to convert acoustic energy received from a location external to the implant into electrical energy used to support operation of the implant, and convert the electrical communication signal received by the controller into an acoustical communication signal for transmission to a location external to the implant; and

an energy storage device configured for storing the electrical energy converted by the one or more transducers.

62. (Newly Added) The implant of claim 61, wherein the one or more acoustic transducers are configured by the circuitry in a full-duplex mode, such that the one or more acoustic transducers can simultaneously convert the acoustic energy into electrical energy and convert the electrical communication signal into the acoustical comunication signal.

63. (Newly Added) The implant of claim 62, wherein the one or more transducers comprise at least one receive only transducer for converting the acoustic energy into electrical energy, and at least one transmit only transducer for converting the electrical communication signal into the acoustical communication signal.

64. (Newly Added) The implant of claim 62, wherein the one or more transducers comprises at least one transducer, each of which is configured by the circuitry for converting the acoustic

energy into electrical energy and for converting the electrical communication signal into the acoustic communication signal.

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65. (Newly Added) The implant of claim 61, wherein the one or more acoustic transducers are configured by the circuitry in a half-duplex mode, such that the one or more acoustic transducers can alternately convert the acoustic energy into electrical energy and convert the electrical communication signal into the acoustic communication signal.

66. (Newly Added) The implant of claim 61, wherein the one or more transducers are collectively configured by the circuitry for converting an acoustic communication signal transmitted from a location external to the implant to another electrical communication signal, the controller configured for detecting the other electrical communication signal.

67. (Newly Added) The implant of claim 61, wherein the one or more acoustic transducers comprise:

a substrate comprising a cavity; and

a substantially flexible piezoelectric layer attached to the substrate across the cavity.

68. (Newly Added) The implant of claim 67, further comprising a first electrode attached to an external surface of the piezoelectric layer and a second electrode attached to an internal surface of the piezoelectric layer.

69. (Newly Added) The implant of claim 67, wherein the substrate comprises an array of cavities, and wherein the piezoelectric layer is bonded to the substrate over the cavities.

70. (Newly Added) The implant of claim 67, wherein the piezoelectric layer comprises poly vinylidene fluoride.

71. (Newly Added) The implant of claim 61, wherein the energy storage device is rechargeable.

72. (Newly Added) The implant of claim 61, wherein the energy storage device comprises a first relatively fast-charging capacitor and a second relatively slow-charging capacitor, the first and second capacitors being coupled to the one or more acoustic transducers such that the first capacitor is charged first and the second capacitor is charged only upon substantially charging of the first capacitor.

73. (Newly Added) The implant of claim 61, wherein the diagnostic data is pressure data.

74. (Newly Added) The implant of claim 61, wherein the electrical energy is alternating current electrical energy, and wherein the controller is configured for converting alternating current electrical energy into direct current electrical energy for storage in the energy storage device.

75. (Newly Added) The implant of claim 61, wherein the controller is configured to reset the implant when the energy storage device is being charged by the electrical energy.

76. (Newly Added) The implant of claim 61, wherein the controller is configured for automatically switching the implant off when the electrical energy available from the energy storage device falls below a predetermined threshold.

77. (Newly Added) The implant of claim 66, wherein the controller is configured for extracting one or more commands from the other electrical communication signal and controlling the implant in response to the one or more commands.

78. (Newly Added) The implant of claim 77, wherein the controller is configured for activating or deactivating the energy storage device in response to the one or more commands.

79. (Newly Added) The implant of claim 77, wherein the controller is configured for monitoring when the one or more acoustic transducers stop converting electrical energy, and for activating the implant when electrical energy is no longer being converted by the one or more acoustic transducers.

80. (Newly Added) A surgical implant, comprising:

a controller configured for controlling the operation of the implant and for generating an electrical communication signal;

one or more acoustic transducers;

circuitry for collectively configuring the each ~~one or~~ more acoustic transducers to convert the electrical communication signal into an acoustical communication signal for transmission to a location external to the implant, and to convert acoustic energy received from a location external to the implant into electrical energy used to support operation of the implant; and

an energy storage device configured for storing the electrical energy.

81. (Newly Added) The implant of claim 80, wherein the one or more acoustic transducers are configured by the circuitry in a full-duplex mode, such that the one or more acoustic transducers can simultaneously convert the acoustic energy into electrical energy and convert the electrical communication signal into the acoustical comunication signal.

82. (Newly Added) The implant of claim 81, wherein the one or more transducers comprise at least one receive only transducer for converting the acoustic energy into electrical energy, and at least one transmit only transducer for converting the electrical communication signal into the acoustical communication signal.

83. (Newly Added) The implant of claim 81, wherein the one or more transducers comprises at least one transducer, each of which is configured by the circuitry for converting the acoustic energy into electrical energy and for converting the electrical communication signal into the acoustic communication signal.

84. (Newly Added) The implant of claim 80, wherein the one or more acoustic transducers are configured by the circuitry in a half-duplex mode, such that the one or more acoustic transducers

can alternately convert the acoustic energy into electrical energy and convert the electrical communication signal into the acoustic communication signal.

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85. (Newly Added) The implant of claim 80, wherein the one or more transducers are collectively configured by the circuitry for converting an acoustic communication signal transmitted from a location external to the implant to another electrical communication signal, the controller configured for detecting the other electrical communication signal.

86. (Newly Added) The implant of claim 80, wherein the one or more acoustic transducers comprise:

a substrate comprising a cavity; and

a substantially flexible piezoelectric layer attached to the substrate across the cavity.

87. (Newly Added) The implant of claim 86, further comprising a first electrode attached to an external surface of the piezoelectric layer and a second electrode attached to an internal surface of the piezoelectric layer.

88. (Newly Added) The implant of claim 86, wherein the substrate comprises an array of cavities, and wherein the piezoelectric layer is bonded to the substrate over the cavities.

89. (Newly Added) The implant of claim 86, wherein the piezoelectric layer comprises poly vinylidene fluoride.

90. (Newly Added) The implant of claim 80, wherein the energy storage device is rechargeable.

91. (Newly Added) The implant of claim 80, wherein the energy storage device comprises a first relatively fast-charging capacitor and a second relatively slow-charging capacitor, the first and second capacitors being coupled to the one or more acoustic transducers such that the first capacitor

is charged first and the second capacitor is charged only upon substantially charging of the first capacitor.

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92. (Newly Added) The implant of claim 80, further comprising a sensor for acquiring diagnostic data, wherein the electrical communication signal generated by the transmission circuit contains the diagnostic data.

93. (Newly Added) The implant of claim 80, wherein the electrical energy is alternating current electrical energy, and wherein the controller is configured for converting alternating current electrical energy into direct current electrical energy for storage in the energy storage device.

94. (Newly Added) The implant of claim 80, wherein the controller is configured to reset the implant when the energy storage device is being charged by the electrical energy.

95. (Newly Added) The implant of claim 80, wherein the controller is configured for automatically switching the implant off when the electrical energy available from the energy storage device falls below a predetermined threshold.

96. (Newly Added) The implant of claim 85, wherein the controller is configured for extracting one or more commands from the other electrical communication signal and controlling the implant in response to the one or more commands.

97. (Newly Added) The implant of claim 96, wherein the controller is configured for activating or deactivating the energy storage device in response to the one or more commands.

98. (Newly Added) The implant of claim 96, wherein the controller is configured for monitoring when the one or more acoustic transducers stop converting electrical energy, and for activating the implant when electrical energy is no longer being converted by the one or more acoustic transducers.

99. (Newly Added) A surgical implant, comprising:

a controller configured for controlling the operation of the implant;

one or more acoustic transducers collectively configured for converting acoustic energy received from a location external to the implant into electrical energy used to support the operation of the implant; and

an energy storage device configured for storing the electrical energy converted by the one or more transducers, the energy storage device comprising a first relatively fast-charging device and a second relatively slow-charging device, the first and second devices being coupled to the one or more acoustic transducers such that the first device is charged first, and the second device is charged only upon substantially charging of the first device.

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100. (Newly Added) The implant of claim 99, wherein the slow-charging and fast-charging devices comprise capacitors.

101. (Newly Added) The implant of claim 99, wherein the controller is configured to generate an electrical communication signal in response to the charging of the first device, and the one or more acoustic transducers are collectively configured for converting the electrical communication signal into an acoustical communication signal for transmission to a location external to the implant.

102. (Newly Added) The implant of claim 99, further comprising a sensor for measuring intra-body diagnostic data, wherein the controller is configured for generating an electrical communication signal containing the diagnostic data, and the one or more acoustic transducers are configured for converting the electrical communication signal into an acoustical communication signal for transmission to a location external to the implant.

103. (Newly Added) The implant of claim 102, wherein the diagnostic data is pressure data.